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Odorless cooking kettles and soup digesters are worthy to be called inventions; the odorless cooking kettles for cauliflower, cabbage, onions, and anything that "smells up the house," is a pot that sets in the stove with an open-cylinder on the inside below the cover; the steam and odors go down through it into the coal smoke and up the chimney flue, \$1.50; the soup digester is an iron pot with an air-tight iron cover attached by heavy clamps, a valve in the cover allows surplus steam to escape, \$3.00.

A recent importation from Paris is known as an Italian freezer for congealing water ices, ice cream, etc.; a small ornamental barrel with movable heads is swung on pivots, in one end is placed salt and ice, in the other cream; by revolving it the freezing is effected, \$10.00.

Lovers of griddle cakes may remember that round and oblong soap-stone griddles are in four sizes each, \$1.12 to \$1.75, and there is also a reversible cast iron griddle with a hinged bar through the center; when a cake is browned, the griddle—not the cake—is turned, \$1.00; mixers for bread and cake are fastened to the table and do the work of kneading better than the hands, \$3.25 and \$3.50; the Eureka extension handle is made of hard wood with galvanized iron trimmings, and can be used any length from six and a half to fifteen feet; a brush, broom, or sponge can be attached for washing windows, sweeping down cobwebs, and dusting high pictures, 50 cents; "coal vases" for the parlor with scoop attached, are in Japanese iron and brass, some of them beautifully ornamented, \$2.75 to \$20.00. Wood baskets for holding hard wood for the grate fire, are in willow, rattan, and brass, \$2.25 to \$5.00.

An excellent convenience is a walnut bath seat hanging from the sides of the tub; the bearings are of rubber and the concern is adjustable, \$5.00; a jack oven recalls visions of old time roasting, a clock movement in the cylinder revolves the meat or poultry for two hours, and a gravity pan below preserves the drippings; one of thirty pounds' capacity, \$14.50.

Individual terrapin stew pans are now used in fashionable assemblages for serving terrapins, sweet breads, and delicacies of a similar kind; they are made of nickel plated copper with a cover, \$18.00 a dozen.

An adjustable wash stand of sheet iron, Japanese, is of English design, \$3.00, and another contrivance from that bold island is a traveling bath tub used also as a trunk, \$8.00; a locked cork which is adjustable to any bottle and an almost perfect thing for wines, poisons, spirits and perfumes, sells for \$1.00.

Wine coolers are in antique brass and German repoussé work; the best have perforated cylinders to hold the bottle; \$6.50 to \$10.00.

Fowler's evaporator is said to moisten and purify the heat from a register; half a dozen circular cotton wicks absorb water from a reservoir, and placed in front of a register, turn the unhealthy heat of furnaces into invigorating air; \$2.00.

Want of space alone prevents us from mentioning more of the articles examined.

## BOOK REVIEW.

### WHIRLWINDS, CYCLONES, AND TORNADOES—WILLIAM MORRIS DAVIS.

THIS essay on the theory of storms is a reprint of a series of papers which appeared some time ago in *Science*. In these days, when the three furies above named commit such devastation, inquiry into their nature and origin is not mere idle toying with scientific knowledge, but of practical value in opening up modes of escape; or (is it too much to hope) in time even controlling to some extent these destroying forces. Few there are who can define the difference between the three kinds of storm, but on the other hand there are men who are devoting their all of life and mental energy to the understanding of their causes. The Signal Service and Weather Bureaus are the outcome of such heroic research, and give faint suggestion of what may be done in a not distant future.

In the classification made by Prof. Davis, the whirlwind is the simplest form of these rotary storms, and to understand it is, in fact, to understand the initial process in all such disturbances. A condition of stable equilibrium is that toward which the atoms are always striving, and yet if undisturbed, it would be chemical, organic and physical death, and there would be no storms to record or explain in a lifeless world. But varying conditions are constantly disturbing the balance, and a storm is an upsetting, followed by an effort of the atoms to readjust themselves in a state of

equilibrium. In a whirlwind the process is as follows: The stratum of air nearest a level plain becomes heated by radiations from the earth's surface. As the temperature rises the mass expands and, it is evident, will so soon as it has opportunity, change places with the denser gas above, which is pressing down upon it at the rate of one ton to a square foot. If kept in perfect balance this arrangement although unnatural may last for some time, but soon as the upsetting takes place the gravitating mass rushes down as it does so forcing upward the warm and lighter air, which glad of an escape, rushes in from all sides towards the point of egress and a turning movement begins in a direction determined by the strongest current. Thus a chimney or vortex is formed through which the heated air rushes until exhausted at the base. This is a whirlwind, a stationary vortex with a strong up-draught created by solar energy and gravitation, and such is the process in the beginning of all rotary storms. Complicated, however, by other and terrible forces in the two other kinds we are considering, evaporation and condensation with their heat generating powers, bring to the cyclone great stores of energy which add fury and force to the result, besides making it self-acting after it is once begun—accumulating force long after the original supply is exhausted—whereas the whirlwind and tornado cease so soon as the original supply of warm air has escaped.

Nor is this all. There is a force arising from the earth's rotation which tends to deflect all atmospheric motions in the Northern Hemisphere to the right, and in the Southern Hemisphere to the left. Under this influence progressive storms move on well-defined paths in invariable directions—from left to right South of the Equator, and from right to left North of it. The maximum of this influence is at the Poles, and the minimum at the Equator; hence it is that cyclones never occur within four hundred miles of that belt.

It will thus be seen that the oppressive heat and calm which precede a storm are actually the conditions from which it is generated and the longer the pause the greater the accumulation of destructive energy. If added to this there be moisture to evaporate and condense again, and these forces thus generated, after becoming centralized, are caught in the great swing of the earth's rotation, then we have a cyclone, varying in intensity not always destructive but sometimes sweeping over the Southern Seas and leaving a great track of desolation behind. But in its worst form it is less terrible than the tornado which in a restricted space seems to crowd the fury of a cyclone. A black funnel-shaped mass, a spiral vortex, which rushes with a roaring sound sucking up everything which comes within reach of its hideous indrawing and updrawing power. No earthly visitant is more terrible. Its explanation is as follows:

Two currents of wind meet. So long as the warmer goes to the top all is well, but sometimes the southerly current pushes itself beneath a thick stratum of cold northwesterly wind. This is an unnatural arrangement as much so as for a layer of oil to lie at the bottom of a glass of water and both strata begin to look for an opportunity to escape from it—a trifling disturbance affords such opportunity—down presses the cold air through the point of least resistance and the upward movement is begun, the warm air rushing from every direction for the point of escape upward, increasing in velocity as it nears the center, and in proportion as the volume to be exhausted is larger and the point of escape higher than in the whirlwind, just so much more terrible an engine of destruction does it become.

The warm mass, often a mile in diameter and a thousand feet in thickness, whirls through sometimes a mile of cold air before it finds vent. The ever-increasing velocity of this current nearly exhausts the air in the center of the cylinder and the core becomes almost a vacuum; it is in fact an air pump drawing up heavy bodies as if they were straws, and in the words of Prof. Davis: "This inward rushing air is the destructive surface blast of the tornado. It accounts for the explosive action of the air in closed houses, for the outward falling of walls, and other hitherto mysterious phenomena attending these storms, now made clear by M. Ferrel's ingenious explanation. No rain can fall in the center, but is on the contrary drawn up to a great height and falls outside of the storm in the form of hail. A tornado lasts about one hour, and traverses in that time about 30 miles. Its progressive motion being in our hemisphere invariably toward the northeast or east, proving it to be under the control of that great force, already described.

Franklin as early as 1750, first suggested that storm centers were progressive and moved over the earth's surface at variable rates. Indeed his

mind, with the prescience of genius, seems to have correctly divined the action of cause and effect in storms, and rejecting the old theories regarding the agency of electricity, gave an explanation for the phenomena, agreeing essentially with that found in Prof. Davis' book. He had not divined all the causes, but the conclusions he had arrived at were singularly correct. Whereas now, almost a century and a half later, there is scarcely one person in five hundred who will not say, if asked, that electricity is the cause of storms, and be incredulous if told it is only an effect and is not an agent in creating them at all.

## THE TASTEFUL HOME OF A WORKING GIRL.

A YOUNG working girl in a New England town has, at small expense, made the appearance of her room handsome and attractive. The floor was stained by her own hands a dark walnut shade, (after staining give one or two coats of shellac to secure a hard and glossy surface) and is partly covered by a rug made of cheap ingrain carpet in a small pattern of cream and olive bordered by a broad band of plain olive felt. The wall paper is pale olive green, lightly touched out with pink; a narrow frieze of the same color tones terminates at the corners in clusters of tiny pink fans.

One window faces a dingy brick wall, and she covered the panes with a pretty pattern of imitation stained glass which gave a bright effect. The other window is gracefully draped with long full folds of patterned muslin.

A large clothes horse covered with olive paper on which are pasted colored pictures grouped in an artistic way, forms a screen, and shuts off the bedstead and wash-stand from view. A second-hand wardrobe draped with a portiere of olive canton flannel contains the brooms, dust-pan and other articles of domestic use.

A pretty willow rocking chair ornamented with olive and pink ribbons and a small hassock stand on the rug.

The room also contains a bookcase of pine, with shelves, closed with a curtain hung from a pole; a couple of second-hand easy chairs, and a small dry-goods box covered with pink and olive cretonne for shoes.

The mantel is draped in olive felt with a border of autumn leaves (cretonne applied), running around it. On the mantel are a Nankin teapot, two tall brass candlesticks, and a large ginger jar in its original blue and white beauty. The latter is often filled with flowers gathered on Sunday walks.

A NEW material for walls has lately been invented, and if it stands the test of time the advantages it seems to have over sand and plaster will doubtless secure it popularity. It is known as soapstone finish, and appears to be mainly composed of pulverized steatite. The merits claimed for it are that it makes a smooth, fine covering for ceilings and walls that with troweling takes a high polish; that its natural tint is pearl gray, more agreeable to the eye than cold white; that it presents the best surface for painting either in oil or water color; that it will not crack or chip, and that nails can be driven into it without damage; that it is a non-conductor and non-absorbent, facts that recommend its use in hospitals, factories, cellars, markets, closets, pantries, and kitchens; that it can be washed without injury; that it wears well and does not turn yellow. If all these claims hold after the properties of the material are fully known and amply experimented with, it will deserve to replace the hard finish in general use. When subjected to heat, moisture and chemical fumes, it is said to give forth no smell, and when painted it is pleasanter to the eye than white finish or cheap paper.

THE old fashion of decorating furniture with underglaze panels seems to be coming into fashion again. A parlor suite has been made for a gentleman in this city which has little circular panels decorated with flowers in the upper rim of the chair backs and larger panels of various shapes with landscapes and birds in the larger pieces. The piano is paneled in the same way with tiles embellished with musical instruments and designs. The color scheme of the tiles is in keeping with the prevailing tint of wood and upholstery, while the glaze gives the ornaments a really brilliant effect. A local piano manufacturer is now building instruments with a view to utilizing the monochrome tiles and panels of the Low pottery in their embellishment.